REMARKS

Claims 1-30 are pending in the subject application and have been examined. Claims 1-3 and 28-30 stand rejected. Applicants acknowledge and appreciate the Examiner's indication that claims 4-27 contain allowable subject matter. Favorable reconsideration of the application and allowance of all of the pending claims are respectfully requested in view of the following remarks.

Initially, it is noted that a certified copy of the priority document will be sent for this application in due course.

Claims 1-3 and 28-30 stand rejected under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 5,509,412 to Bahn. Applicant respectfully traverses these rejections based upon the following remarks.

Claim 1 recites a method of estimating the spatial variation of magnetic resonance imaging radio frequency (RF) signal intensities within an object from measured RF signal intensities of a uniform spin density medium surrounding the object. The method comprises acquiring a magnetic resonance image of an object bounded by a medium which is of essentially uniform spin density, on the length scale of resolution of the image, formulating a semi-empirical mathematical model of the spatial variation in RF signal intensity within the object, and fitting the model to selected measured RF signal intensities of the surrounding medium to obtain an estimate of the spatial variation of magnetic resonance imaging radiofrequency (RF) signal intensities within the object.

Similarly, claim 30 recites a method of enhancing a magnetic resonance image (MRI) of an object. The method comprises obtaining an initial MRI image of the object, estimating the spatial variation of magnetic resonance imaging radio frequency (RF) signal intensities within the object from measured RF signal intensities of a uniform spin density medium surrounding the object by: acquiring a magnetic resonance image of an object bounded by a medium which is of essentially uniform spin density, on the length scale of resolution of the image, formulating a semi-empirical mathematical model I(x,y) of the spatial variation in RF signal intensity within the object, fitting the model to selected measured RF signal intensities of the surrounding medium to obtain an estimate of the spatial variation of magnetic resonance imaging radiofrequency (RF) signal intensities within

the object, and rescaling the initial MRI image by dividing the signal intensities of the image of the object.

Thus, each of claims 1 and 30 requires the feature of fitting a model to measured RF signal intensities originating from a medium that surrounds an object (i.e., the recited surrounding medium) in order to obtain an estimate of the spatial variation of the magnetic resonance imaging RF signal intensity within the object. Bahn fails to disclose or suggest such a feature.

Bahn describes a method for producing an MR image based upon an estimation of blood volume in each voxel during a scan in which a bolus of an agent is injected into a patient and a time course set of NMR image data is acquired. In particular, Bahn describes a method (see, e.g., Col. 2, lines 21-39 of Bahn) that includes injecting a patient with an agent, acquiring NMR image data from the stationary patient as the agent flows through the voxels from which the NMR image data is acquired, reconstructing a set of NMR images in which intensity values indicate the NMR signal level at each voxel at a corresponding set of times during which the agent flows through the voxel, calculating a blood volume value at each voxel by fitting a model curve that includes as one of its defining parameters the blood volume value to the set of intensity values for the voxel using nonlinear regression, and producing an image in which the intensity of each voxel is indicated by its blood volume value.

The method described in Bahn is completely different from the invention as recited in claims 1 and 30. Initially, it is noted that Bahn is concerned with determining blood volume and not the spatial variation of magnetic resonance imaging intensities as recited in claim 1 or enhancing magnetic resonance images as recited in claim 30.

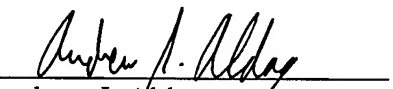
Further, the medium in which the MR intensities are determined in Bahn (i.e., the blood including the agent flowing through the voxels) is the same medium for which a property is estimated (i.e., the blood volume). In other words, there is no disclosure in the method described in Bahn of fitting a model to measured RF signal intensities originating from a medium that surrounds an object in order to obtain an estimate of the spatial variation of the magnetic resonance imaging RF signal intensity within the object. Thus, Bahn does not anticipate or render obvious claims 1 and 30, and the Examiner is requested to withdraw the rejection of these claims based upon Bahn.

Claims 2, 3, 28 and 29 depend from claim 1 and thus include all of the limitations of their parent claim. Accordingly, these claims should also be allowed over Bahn, and the Examiner is requested to withdraw the rejection to these claims based upon Bahn.

In view of the foregoing, the Examiner is respectfully requested to find the application to be in condition for allowance with claims 1-30. However, if for any reason the Examiner feels that the application is not now in condition for allowance, the Examiner is respectfully requested to call the undersigned attorney to discuss any unresolved issues and to expedite the disposition of the application.

Applicants hereby petition for any extension of time that may be required to maintain the pendency of this case, and any required fee for such extension is to be charged to Deposit Account No. 05-0460.

Respectfully submitted,



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